Acadgild

Full-stack Web Development

Acadgild

Full-stack Web Development

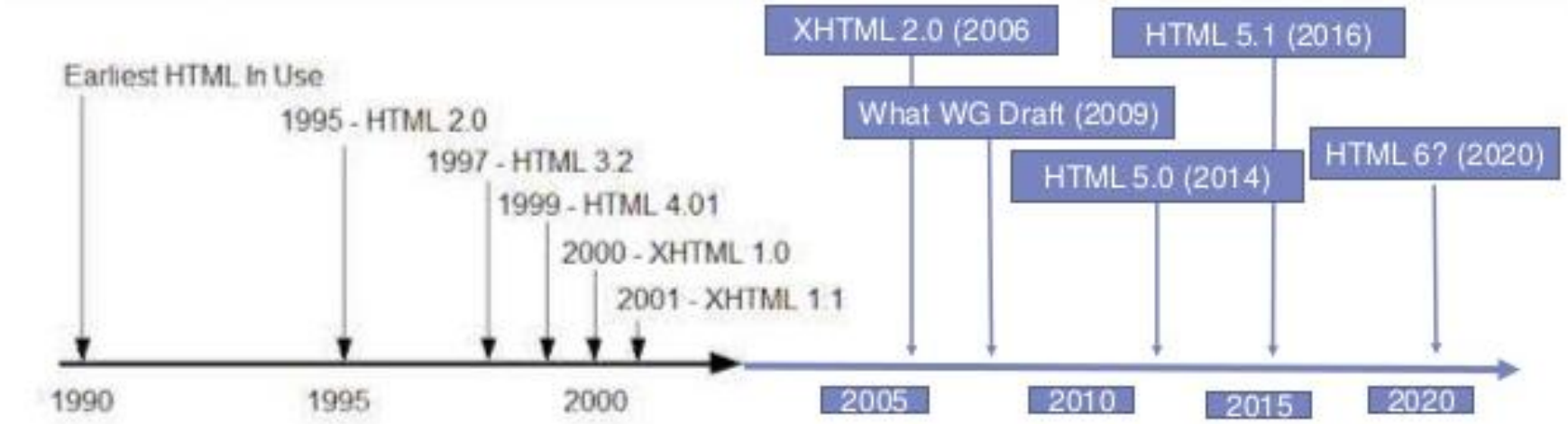
Agenda

1. HTML History
2. Document Type Definition
3. HTML Basics
4. HTML Structure
5. Hyper Linking
6. HTML Tags
7. HTML Commenting
8. DOM, BOM
9. Link v Style
10. Styling
11. Scripting

HTML History

HTML originated from SGML (Standard Generalized Markup Language) where it was initially developed to share the markup document over the network. Later HTML become a very successful language to develop web applications. This simple, human readable file is transferred through HTTP / HTTPS Protocol.

Let's have a look at the evolution of HTML until 2018. The diagram below diagram helps you understand that HTML5 is the current version and HTML6 may be available by the year 2020.



DTD – Document Type Definition

What is DTD?
DTD stands for Document Type Definition.
It is a set of markup declarations that define a document type.

Why DTD?
This is the first line of every HTML document.
It is a set of instructions, definitions of what are the valid elements and their attributes.
This is something very important to the browser which parse the html document and render (painting) the web page using Web browser engine.

Below is the HTML5 Code snippet which has DTD in the first line. In HTML5, The DTD got simplified prior to the previous versions where its very lengthy.

```
<!DOCTYPE html>
<html lang="en-US">
<head>
<title>DTD Tutorial</title>
</head>
```

HTML Basics

Doc Types

- Doctype is not an HTML Tag. It is a set of instruction given to the browser to understand what kind and version of document is about.
- HTML 4.01 and XHTML 1.0 is different where they add various types of "Doctype".

Below are the list of doctype for various HTML Versions.

HTML 5 and beyond	<!DOCTYPE HTML>
HTML 4.01 Strict	<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN" "http://www.w3.org/TR/html4/strict.dtd">
HTML 4.01 Transitional	<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">
HTML 4.01 Frameset	<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Frameset//EN" "http://www.w3.org/TR/html4/frameset.dtd">
XHTML 1.0 Strict	<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
XHTML 1.0 Transitional	<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
XHTML 1.0 Frameset	<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Frameset//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-frameset.dtd">

For more information about various DTD Types – Visit W3C Recommended Doctype Declarations and https://en.wikipedia.org/wiki/Quirks_mode#Comparison_of_document_types

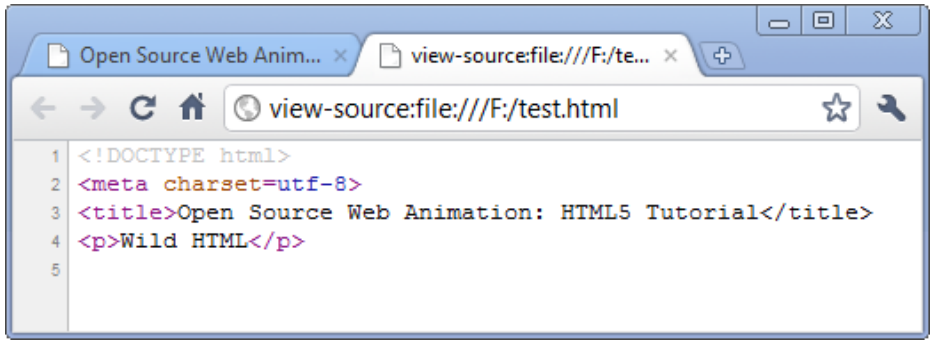
HTML Basics

Charset

- Charset is nothing but character set.
- A character set is a collection of letters and symbols used in a writing system.
- Characters that are grouped for specific needs are called Charset.

Character encodings

- If you use Non-English text, site visitors can't understand the content is provided on the web page unless you provide what encoding is been used.
  For example: Latin, Chinese or Devanagari character.



How character has been encoded

- Assume that all characters are stored using unique codes (ciphers). Character encoding provides a key to unlock the code and mapping between bytes in computer and character in character set. without a key its a key its unreadable and looks like garbage.

HTML Basics

➢ **Charset Types**

- ASCII Character
- ANSI Character Set (Windows-1252)
- ISO-8859-1 Character Set
- UTF-8 Character Set (HTML5 Default Charset)

➢ **Character encodings Declaration**

This declaration helps the browser to understand on how or what type of encoding used for an HTML or XML Page.

- You can choose "UTF-8" character encoding for your content because you can use a single character encoding to handle any character
- UTF-8 is the most widely used way to represent Unicode text on web pages

➢ **Escapes**

- Escapes is a way of representing a character and it uses ASCII text. They provide a way of representing characters that are not available in the character encoding you are using.

HTML Basics

What is SGML?

Standard Generalized Markup Language is a standard for defining generalized markup languages for documents. HTML was theoretically an example of an SGML based language until HTML 5.

Lets split the word HTML in two pieces for a deeper understanding

What is Hyper Text?

Text displayed on a computer display or other electronic devices like mobile, tablet display.

What is Markup Language?

A markup language is a system for annotating a document.

Modern way of annotating a system “HTML” instead of quotes is with arrow symbols like <html>

HTML Basics

What happens when you hit a URL in the Web Browser?

Let's imagine that you want to access GitHub Profile https://github.com/addyosmani to get to know Google developer activity in Open Source Projects.

So you will follow these steps:

Type https://github.com/addyosmani in your browser Address bar.

What is the browser action for your request?

The browser checks the cache for a DNS record to find the corresponding IP address of "github.com".

What is Cache?
A collection of data duplicating original values stored elsewhere on a computer, usually for easier access.

Here we discuss Web Cache

What is Web Cache?

A web cache (or HTTP cache) is an information technology for the temporary storage (caching) of web documents, such as HTML pages and images, to reduce server lag. For example: ETag, CDN

What happens then?

There will be four level cache. It looks in any one cache for DNS data to fetch GitHub domain IP Address and trigger HTTP Request.

Mention the four levels of cache and explain their usage.

1. Request **Browser cache** whether you visited earlier for DNS cache where browser maintains own cache of DNS.

2. Request **OS Cache** - When Browser Cache is not available. Browser would make System call for the DNS Cache information maintained by Operating System.

3. Request **Router Cache** – When Browser and OS Cache is not available.

4. Request **ISP Cache** – when above cache has no information.

When above four cache are helpless, from the fourth level, ISP's DNS server initiates a DNS query to find the IP address of the server that hosts github.com.

HTML Basics

Oh, What next?

1. Browser sends TCP Connection with GitHub Server.
2. TCP Connection established for data transmission.
3. Browser sends an HTTP Request to the Web Server.
4. Let's say simple example of Get Request for Profile Page
5. GitHub Server send out an HTTP Response.

HTTP Response

```
HTTP/1.1 200 OK
Cache-Control: private, no-store, no-cache, must-revalidate, post-check=0,
    pre-check=0
Expires: Sat, 01 Jan 2000 00:00:00 GMT
P3P: CP="DSP LAW"
Pragma: no-cache
Content-Encoding: gzip
Content-Type: text/html; charset=utf-8
X-Cnection: close
Transfer-Encoding: chunked
Date: Fri, 12 Feb 2010 09:05:55 GMT
```

Wow. It's done. You got 200 Response Status which is for Success

Why is there so much of Cache?
Caches are important for regulating network traffic and improving data transfer times.

HTML Structure

1. Structure of the HTML File has two parts. One is <head> and another one is <body>
2. Head Tag contains the information which can be read by browsers and search engines for quick header information.
3. Body Tag will contain all the tags which will be displayed in the browser.

```
<!doctype html>
<html>
   <head>
     <meta charset="utf-8">
   </head>
   <body>
         Your Content
   </body>
</html>
```

HTML Linking

- A link in HTML is called a Hyper Link.
- Hyperlinks are one of the most exciting innovations the Web has to offer.
- They allow us to link our documents to any other document and other site document as well.
- A link does not have to be text. It can be an image or any other HTML element.

```
<!doctype html>
<html>
   <head>
    <meta charset="utf-8">
   </head>
   <body>
        <a href="http://www.google.com">Google</a>
   </body>
</html>
```

HTML Tags

- HTML Element is an individual component of an HTML document or web page.
- HTML is composed of a tree of HTML nodes, such as text nodes.
- Each node can have HTML attributes.

```
<body>
        <header></header>
        <article>
                <h1>Hello</h1>
                <p>Text goes here</p>
        </article>
        <footer></footer>
</body>
```

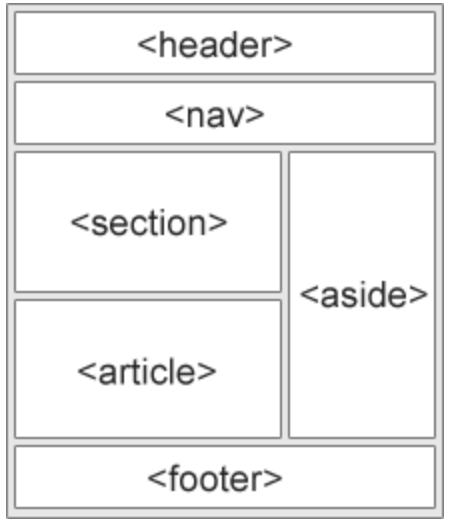
HTML Tags

What is Semantic Elements?

- Semantic HTML is the use of HTML markup to reinforce the semantics.
- In short, using Appropriate Element / Tag for the appropriate need.
- Semantic tags are those tags which clearly defines its content.

```
<!—Semantic Approach -->

<h5>Headline</h5>
<p>Paragraph goes here</p>
<div>
   <span>Text Goes here</span>
</div>
```



HTML Tags

How it become Non Semantic?

Non Semantic is no care about every element real usage.

```
<!- Non Semantic-->
<span>
   <div>Text Goes here</div>
</span>

<!—Semantic Approach -->

<div>
   <span>Goes here</span>
</div>
```

HTML Tags

How is HTML5 different from HTML4 with new Semantic Elements?

Typical HTML4	Typical HTML5
	<header>
	<nav>
	<section>
	<article>
	<footer>

HTML Tags

➢ **Why You Should Care About Semantics**

1. Communication with Search Engine / Screen Readers will be very clear.
2. With the right semantics of the content, it will be easier for the rest of the agents to deal with it.

➢ **HTML5 provides many new elements to make a Web Developer's life easy:**

- New media elements.
- New structural elements.
- New semantics for internationalization.
- New link relation types.
- New attributes.
- New form types.
- New microdata syntax for additional semantics.

Bad vs Good Approach

- Use lowercase element names.
- Close all elements and empty elements.
- Lower case attribute names.
- Quote attribute values in double quotes.
- Alt in image attributes.
- Good approach for displaying images.

```
<!doctype html>
<html>
    <head>
        <meta charset="utf-8">
    </head>
    <body>
        Your Content
    </body>
</html>
```

HTML Comments

- A comment is a programmer-readable explanation or annotation in the source code of a computer program.
- In short, it will be ignored by compilers and interpreters.

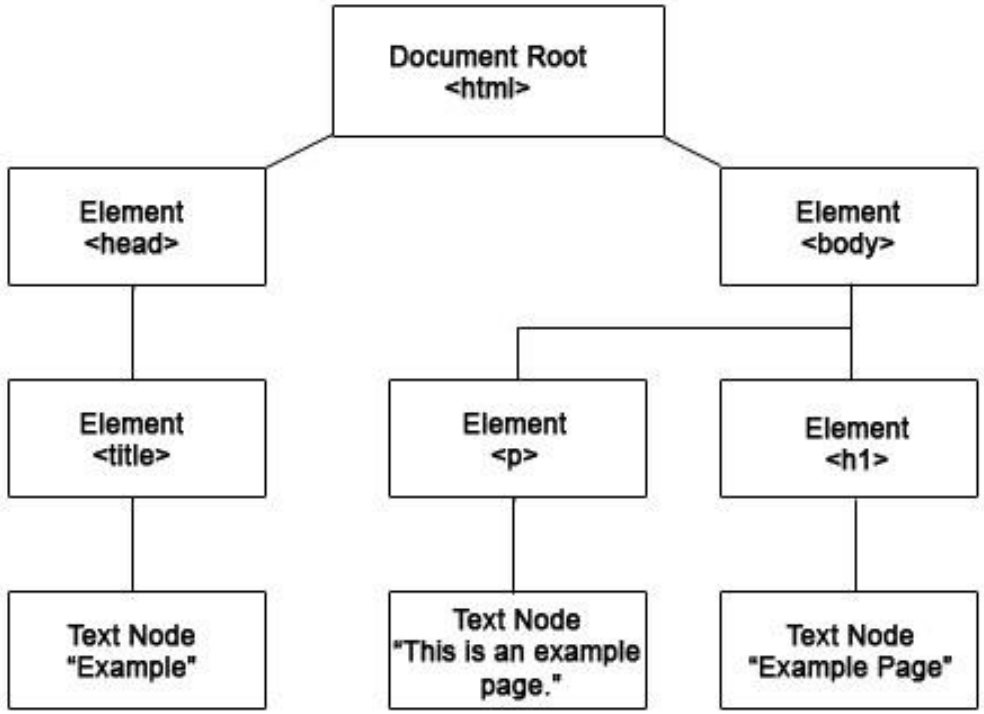
```
<!-- You will not be able to see this text. -->

You can even comment out things in <!-- the middle of --> a sentence.

<!-- Or you can
comment out
a large number of lines.
-->
```

DOM, BOM

- DOM stands for Document Object Model.
- Its an API which helps to communicate between Scripting and Browser.
- The DOM model represents a document with a logical tree.
- Each branch of the tree ends in a node, and each node contains objects.
- DOM methods allow programmatic access to the tree.
- BOM stands for Browser Object Model and deals with history, location, navigator and screen objects.



Styling

- CSS Stands for Cascading Stylesheets.
- It’s a wonderful technology you should start learning after HTML5. While HTML is used to define the structure of the page and semantics of your element content, CSS is used to style it and lay it out.
- CSS is used to style and lay out web pages.
- Alter the font, colour, size and spacing of your content, split it into multiple columns, or add animations and other decorative features.

What is CSS?

CSS is language for specifying how documents are presented to users.

Styling

How does CSS affect HTML?

Web browsers apply CSS rules to a document to affect how they are displayed.

What are the available types of CSS?

- External Stylesheets
- Internal Stylesheets.
- Inline Styles

Link vs Style

Lets discuss the difference between <link> and <style> element in HTML5

<link> element helps to call External Stylesheet.

<style> element helps to create a Internal Stylesheet.

External Stylesheet

```html
<!DOCTYPE html>
<html>
    <head>
        <link rel="stylesheet" type="text/css" href="styles.css">
    </head>
    <body>
        <div id="app"></div>
    </body>
</html>
```

Internal Stylesheet

```html
<!DOCTYPE html>
<html>
    <head>
        <style>
                body {
                        background-color: linen;
                }

                h1 {
                        color: maroon;
                        margin-left: 40px;
                }
        </style>
    </head>
    <body>
        <div id="app"></div>
    </body>
</html>
```

Scripting

- A scripting or script language is a programming language that supports scripts.
- Programs written for a special run-time environment that automate the execution of tasks that could alternatively be executed one-by-one by a human operator.
- The term "scripting language" is also used loosely to refer to dynamic high-level general-purpose languages.

What is JavaScript?

- Often abbreviated as JS, JavaScript is a high-level, dynamic, weakly typed, prototype-based, multi-paradigm, and interpreted programming language.
- JavaScript helps to do scripting in Browser Level.

What is the difference between JavaScript and ECMAScript?

- ECMAScript (or ES) is a trademarked scripting-language specification standardized by Ecma International in ECMA-262.
- It was created to standardize JavaScript, so as to foster multiple independent implementations.

Terms to Remember

- TCP - Transmission Control Protocol
- HTTP - Hypertext Transfer Protocol
- URL - Uniform Resource Locator
- DNS - Domain Name System
- SGML - Standard Generalized Markup Language
- HTML - Hypertext Markup Language
- BOM - Browser Object Model
- DOM - Document Object Model
- DTD - Document Type Definition
- ETag - Entity Tag
- CDN - Content Delivery Network
- OS – Operating System
- ISP – Internet Service Provider

Email us - support@acadgild.com